

Segmental Phonology and Black South African English Speakers: Communicative Success with Standard Dialect Listeners

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ABSTRACT

The study investigated the nature of the listener confusion that occurs when Black South African English (BSAE) speakers communicated a list of common English words to speakers of Standard South African (StdSAE) English. Specific difficulties with vowels, diphthongs and consonants are discussed in terms of their effect on intelligibility. It is suggested that all segmental features of BSAE relate to two distinct levels: a functional (meaning) level and an aesthetic level. This study focused on the functional level, and aimed to describe the segmental features of BSAE speech that affect meaning. Such a distinction has particular relevance for speech and language therapists who need to have a clear rationale for their work with BSAE-speaking clients. Treatment of speech problems due to first language transfer, is discussed in terms of this emerging client group within South Africa, and more generally.

KEY WORDS: phonology, Black South African English, Standard South African English, South Africa, language transfer, functional, aesthetic.

INTRODUCTION

An emerging area of interest in speech and language pathology is the communication instruction of individuals desiring to improve their use of Standard English grammar, vocabulary and phonology. Speech and language therapists have the potential to involve themselves with clients who use a non-standard dialect and what is commonly called an 'accent.'

Speech and language therapists in South Africa have become increasingly sensitive to their bilingual clients' needs and it is a commonly held view that this knowledge is required so that they are able to distinguish between pathological articulation errors and those resulting from first language interference (Proctor, 1994). This remains a relevant aspect of clinical work in any multilingual context. However, in this paper it is suggested that speech and language therapists are ideally positioned to involve themselves further in serving the needs of non-standard English speakers in a context that is removed from the pathological, but remains concerned with successful communication in a broader sense.

In South Africa there is some confusion regarding the involvement of speech and language therapists with such client groups. The American Speech-Language-Hearing Association (1983) has developed guidelines for working with individuals wanting to acquire Standard English. These guidelines state that the speech-language pathologist may "provide elective clinical services to nonstandard English speakers who do not present disorder" (p.24). However such services should be delivered in such a way as to provide the desired competency in Standard English without jeopardising the integrity of the individual's first

language or other dialects. Britain's Royal College of Speech and Language Therapists (RCSLT, 1996) espouses a similar point of view, suggesting that speech and language therapists should strive to maximise communication in all client groups while regarding bi- and multi-lingualism as an asset. The present research aligns itself with these professional views and suggests that there is a need to promote this type of speech and language therapy service in multilingual countries such as South Africa where L2 speakers abound and have specific needs and aspirations in terms of English proficiency. Differences in dialect, language and culture act as 'levels of remove' (Cameron & Williams, 1997) and may combine today with the effects of the country's Apartheid history to result in misunderstanding and sometimes fractured relations between different cultural groups. From a pragmatic perspective, interference has the potential to reduce intelligibility (Jacobs, 1984) and thereby result in miscommunication, and this is the domain of the speech and language therapist.

This paper argues that speech differences should be divided into those that characterise the accent and do not compromise intelligibility, and those features which lead to miscommunication. Therapists need to be clear about the rationale for therapy and their ultimate goal since phonological intervention with dialectal speakers may address one or both of the following levels:

1a Level 1 - Functional Level: Phonological intervention may be aimed at addressing purely functional difficulty, i.e. The client is unable to convey meaning adequately because realisations of some phonemes differ too widely from the standard production. Intervention addresses those differences that lead to miscommunication, so that

the individual is able to make him/herself correctly understood when functioning in a standard SAE environment.

2a *Level 2 - Aesthetic Level*: At a more advanced level, there may be clients who desire to master or more closely approximate the standard dialect of a language. Their speech is adequate in terms of conveying a message, but for aesthetic and/or utilitarian reasons they aim for a reduced BSAE accent.

When addressing the functional level, understanding of the features that are most likely to lead to miscommunication in situations calling for standard dialect usage, would be valuable. Researchers have approached this subject from widely different subject areas, ideological views and methodologies over the course of some 40 years - and these papers have often been of limited practical value to the speech and language therapy clinician. Speech and language therapists need to possess a clear understanding of the prominent features that characterise BSAE phonology, as well as the system and structure of the bilingual's two distinct phonological systems. Only once normative information has been acquired can adequate linguistic analysis and principled therapeutic intervention take place at one or both of the two levels mentioned.

ENGLISH IN SOUTH AFRICA

In South Africa, English is regarded by many as a language of empowerment for use in education, economics and politics (Wade, 1998). While a fairly large corpus of research into white varieties of English in South Africa has been amassed (e.g. Lanham, 1967, 1978), research, which has the English of black South Africans as its focus, is less well established.

Black South African English (BSAE) is the term used to refer to the distinctive dialect used primarily by Black South Africans who are indigenous to this country and whose ancestors' birthplace is pre-colonial Africa (Mesthrie, 1995). These speakers are first language speakers of the Nguni (Zulu, Xhosa, Ndebele and Swati); Sotho (Pedi, Sotho and Tswana), Venda and Tsonga language groups. BSAE is thought to have emerged as a result of "the educational experience of speakers, their culture and lifestyles which encourage code-mixing, a high degree of enclosure which encourages group cohesiveness, religious affiliations, and the overall black political experience in South Africa." (Buthelezi, 1995, p.242). Census data suggest that less than 0.25% of blacks have English as their first language, and between 30 and 61% of black South Africans have 'some knowledge' of English (Gough, 1996). Knowledge of English is highest in urban areas and reveals a positive correlation with degree of education (Gough, 1996). Almost 75% of all South Africans have an indigenous African language as their mother tongue (Kaschula & Anthonissen, 1995).

Standard South African English (StdSAE) is the prestige dialect that is spoken by the dominant culture and those who hold economic power. It is the variation of English most suited to act as a language of wider communication in international circles (Kaschula & Anthonissen, 1995). While pluralistic views (e.g. Proctor, 1994) suggest that no dialect is more correct or more sophisticated than another, the utility of having access to the standard dialect - what Akinnaso (1994) refers to as "Right to Language" - is great. Proctor (1994) suggests that one of the primary reasons

that parents send their children to school is to learn to speak or approximate the standard dialect.

THEORETICAL ASPECTS OF LANGUAGE INTERFERENCE

There has traditionally been a strong belief that most of the difficulties facing the second language (L2) learner are imposed by his or her first language (L1) (Ellis, 1985). The process held responsible for this was termed language interference or language transfer, and it refers to deviations from the norms of a language that occur in the speech of bilingual individuals as a result of their familiarity with more than one language (Baetens-Beardmore, 1986).

Interference may occur at various linguistic levels. Observation and experimental evidence suggest second language learners frequently struggle with their phonetic learning, even when other aspects are mastered (Baetens-Beardmore, 1986; Wayland, 1997). Reasons for these difficulties are not well-understood. Supporters of Contrastive Analysis (see Ellis, 1985) suggest that phonological features that are different in L1 and L2 are the problem areas, while other authors such as Gough (1996) observe that the effects of L1 are more pervasive and more subtle than has been traditionally thought. He suggests that it is a constructive rather than a destructive process, and is a performance phenomenon whereby the learner borrows from the mother tongue to assist in getting a message across. This is logical for lexical and syntactical items but is not wholly applicable to phonology. What is relevant to the present study of phonology is Gough's pragmatic view of language: he suggests that borrowing is successful when communication is a success. Phonological interference however, remains a persistent yet little understood feature of L2 learning.

Researchers have attempted to account for what Wayland (1997) terms the 'foreign accentedness phenomenon' by looking at the relationship between sounds or phonemes in the sound systems of L1 and L2. One such approach is the Speech Learning Model developed by Flege (1995). He hypothesised that sounds that are similar to those in the native language are more difficult to learn than those that are either novel or identical to those in the first language. If the sound in the second language is identical to the sound in the native language, there will be no difficulty. Nor is there difficulty when there is nothing in the native phonology to guide the phonetic learning. Difficulty is thought to arise when there is enough resemblance to cause intrusion from the native representation.

INTERFERENCE IN BSAE PHONOLOGY: LITERATURE REVIEW

First language interference in the English speech of black South Africans has been widely noted. Lanham's early studies (1965, 1967, 1969, 1978) form the basis for most of the later work on BSAE phonology by authors such as Khumalo (1984), Jacobs (1984) and Bailey (in Wade, 1996).

The most marked divergence between BSAE and StdSAE is in the vowel systems of the two varieties. The vowel system of StdSAE is reinterpreted by BSAE speakers as a five vowel system. Most of the consonantal phonemes of StdSAE have equivalents in speakers' L1's. A composite listing of possible features of BSAE is presented in Table 1.

The information needed for analysing interference at the phonological level is both the phonetic quality of the phonemes in the two languages concerned and their major allophones as well as their distributional sequence. The following section is concerned with an introduction to these areas in StdSAE, as well as an introduction to a common L1 for BSAE speakers in South Africa, the Nguni language, Xhosa. Bailey (in Wade, 1996, p20) notes "although the phonology of BSAE reflects mother-tongue influence, the main characteristics of BSAE appear to be common to all speakers irrespective of their mother tongues." Xhosa is the predominant Nguni language spoken in the Western

Cape region of South Africa, and was selected as a representative L1 for BSAE speakers in the country.

Xhosa

The phonology of Xhosa is characterised by a simple vowel inventory and a highly marked consonantal system with ejectives, implosives and clicks (Lanham, 1969). Vowels include /a/ in BATH, /i/ in FLEECE, /u/ in GOOSE, /ɛ/ in DRESS, and /ɔ/ in LOT (Lanham, 1969). The mid vowels /ɛ/ and /ɔ/ have phonologically conditioned, raised allophones [e] and [o] (Gough, 1996). There are no diphthongs. Xhosa

Table 1. Composite listing of possible features of BSAE (see references in text)

| Vowels |
|---|
| <ol style="list-style-type: none"> 1. Inability to assign length feature to long vowels so that: <ol style="list-style-type: none"> a) /i:/ and /I/ -> /I/ (or alternatively /i/ and /I/ -> /i/) b) /u:/ and /ʊ/ -> /u/ c) /ɔ/ and /o:/ -> /o/. 2. Absence of mid and high central vowels viz. /ɜ/, /ɪ/ and schwa 3. Inability to maintain stress contrasts. <ol style="list-style-type: none"> a) Unstressed schwa is realised as /ə/, or b) schwa -> /ə/, /i/, /e/ or /u/. 4. Confusion between /ə/ and /e/. 5. a) /æ/, /e/ and /ɜ/ -> /e/.. 6. /ʌ/ and schwa -> /ə/. 7. /ʌ/ and /a:/ -> /ə/. 8. /eə/ -> /e/. 9. /æ/, /a:/ and /ʊ/ -> /ə/. 10. /o:/ and /ɔ/ -> /o/. 11. An overly tense basis of articulation. |
| Diphthongs |
| <ol style="list-style-type: none"> 1. Some diphthongs tend toward monophthongs <ol style="list-style-type: none"> a. /eɪ/ -> /e/ b. /eʊ/ -> /o/ 2. Some diphthongs (the broader ones) are realised as sequences of simple vowels <ol style="list-style-type: none"> a. /aɪ/ -> /ai/ b. /aʊ/ -> /au/ c. /ɔɪ/ -> /si/ d. /ɪə/ -> /iɛ / [ie ~ ia] e. /ʊə/ -> /ua/. 3. Others (the narrow ones) are extended over two syllables and separated by glides <ol style="list-style-type: none"> a. /aɪ/ -> /ajɪ/ b. /aʊə/ -> /awa/ c. /ʊə/ -> /uwa/ d. /eʊə/ -> /owa/ e. /ɪə/ -> /ija/. |
| Consonants |
| <ol style="list-style-type: none"> 1. Interdental /θ/ and /ð/ are replaced by alveolar /t/ and /d/ (may be a basilectal feature). 2. Devoicing of obstruents /b/, /d/, /g/, /dʒ/ and /z/ - especially in word final position. 3. Devoicing of stops in word final position. 4. May be confusion between approximants /r/ and /l/ (although may be specific to L1 Zulu speakers). 5. /tʃ/ -> /tʃ/ (occasionally). 6. Generally trilled /r/. 7. Stops have later voice onset time. 8. /ʒ/ -> /dʒ/. 9. Simplification of consonant clusters by insertion of epenthetic vowel e.g. /strip/ -> /sterip/. 10. Epenthetic vowel inserted in place of syllabic consonants /n, m, l/ e.g. /botl/ -> /botel/. |

has 9 consonantal features not found in English (Mowrer & Burger, 1991). Fifteen consonants are produced in the same manner as English consonants, and these are: /b, d, g, f, v, s, z, l, m, n, ŋ, dʒ, w, j, ʃ/.

All syllables in Xhosa are open (Khumalo, 1984). Utterances are almost always initiated and terminated with a vowel, and consonants occupy mainly inter-vocalic positions (Mowrer & Burger, 1991). Syllable stress occurs on the penultimate syllable except in the case of ideophones where stress is on the first syllable. Stressed syllables are lengthened. The large range of rising and falling varieties of tones (nine pitches) gives Xhosa a highly musical sound.

South African English

The discussion that follows focuses on Respectable StdSAE (Lanham, 1967) which is the local standard used mainly by white middle class speakers, and has also been referred to by authors such as Wade (1996).

The StdSAE system consists of 12 vowels and eight diphthongs. Short front vowels in SAE include /æ/ (low vowel in TRAP), /e/ (mid vowel in DRESS) and /i/ (high vowel in KIT). Short back vowels include /ɒ/ (in LOT) and /ʊ/ (in FOOT). Central vowels include /ʌ/ (in STRUT) and /ə/ (in COMMA). The long monophthongs include /i:/ (high, front vowel in FLEECE); /ɜ:/ (mid-centralised vowel, in NURSE); /ɑ:/ (central and high vowel, in GOOSE); /ɔ:/ (long, back vowel, in THOUGHT) and /ɑ:/ (central to back, low vowel in BATH).

English syllables may be either open or closed and consonants occupy chiefly inter-vocalic positions. Phonotactically English is more complex than the Nguni languages in that it permits consonant clusters that are not permissible in Xhosa.

The present study aims to focus specifically at a performance level and to determine trends in the patterns of failure and success in BSAE subjects' communication of single word items to StdSAE listeners, and to relate these segmental features to the functional and aesthetic levels which, it is suggested, will have particular relevance to speech and language therapists.

METHODOLOGY

DESIGN OF THE STUDY

A multiple single-case design was employed, with a qualitative investigation of each dyad's communication, as the main focus.

SUBJECTS

A total of 22 subjects were used and consisted of a BSAE (speaker) group of 10 subjects and a StdSAE (listener) group of 12 subjects. Ten dyads were used, each pair consisting of one BSAE and Xhosa first language speaker, and one first language StdSAE speaker. Members of each pair were matched in terms of gender and age. The study aimed to focus on BSAE and StdSAE subjects who are middle class, economically productive members of society.

SELECTION CRITERIA APPLICABLE TO BOTH GROUPS:

Subjects between the age of 20 and 55 years were selected. They were required to have normal learning ability and normal hearing. The mean age of subjects in both

groups was 38 years. The age range was deliberately broad in order that a variety of BSAE speech could be examined.

SELECTION CRITERIA SPECIFIC TO BSAE

SUBJECTS:

Subjects were Xhosa L1 speakers from the Western Cape. They were required to have English as a second language, and to have been exposed to English for at least 10 years in a work or study environment. They were also required to be able to read fluently in English.

SELECTION CRITERIA SPECIFIC TO STDSAE

SUBJECTS:

Subjects were required to use a dialect approximating Respectable StdSAE as their first language, and to have been educated in an English-medium school. They were required to use StdSAE in their daily work or study environment. Subjects were excluded from the study if they were able to speak one of the Nguni languages, since this might have affected their perception of BSAE speech.

Degree of bilingualism

Degree of bilingualism is notoriously difficult to estimate (Baetens-Beardmore, 1986). A questionnaire was orally administered to determine each individual's history of language exposure and usage, as part of the subject selection procedure. All BSAE subjects, with the exception of one (S2), were able to speak some Afrikaans as a third language. Similarly, all StdSAE subjects were L2 speakers of Afrikaans, so that Afrikaans was a confounding linguistic variable for both groups.

STIMULI

A list of stimulus words was constructed to allow for the production of each StdSAE vowel, diphthong and consonant in a variety of contexts. Each phoneme was targeted in at least two different words. The final master list consisted of 120 commonly used English words of which approximately two thirds were repeated items (72 items plus 48 repeated items). Items which appeared twice were used to yield measures of intra-subject reliability. All words were monosyllabic words with either open or closed syllable structure, with the exception of two bi-syllabic words which gave the opportunity to produce the unstressed /ə/ phoneme. Monosyllabic words potentially allow for the production of many homophones. Ten lists, each of a different randomised order, were created from the master list. Words were selected in such a way that there were alternative words for about 50% of the items, for example one might expect confusion between 'bird' and 'bed' and both these words appeared in the wordlist.

StdSAE listeners were expected to be guided by semantic constraints as they would in a natural communicative setting. Situational and syntactic cues were, however, lacking in the experimental task. This made the task unnatural and more difficult than in a 'real-life' setting. While this might be regarded as a methodological shortcoming of the study, it could also offer the clinical linguist a reasonably constrained way in which to assess BSAE phonology. Most developmental phonology assessments use a single word format.

PRELIMINARY INVESTIGATION

A pilot investigation was carried out to determine whether the list of stimulus words achieved a moderate level of difficulty, and whether any other difficulties in the procedure (described in the following section) were apparent. Two dyads, consisting of a total of 4 (2 BSAE and 2 StdSAE) volunteer female subjects who met all subject selection criteria, were used. A moderate level of difficulty was found: the StdSAE listeners correctly perceived 62% and 64% of the words, and the word list was therefore not modified further.

PROCEDURE

Place and duration of data collection

The experimental exchange took place in a quiet office in a hospital clinic, where reader, writer and researcher were present. Data collection took place over the course of one full weekday.

Formation of dyads and swapping of listeners

Each BSAE subject was paired with two StdSAE individuals who met criteria for age and gender matching. Each BSAE subject read a full word-list (120 words), with one half presented to one StdSAE subject (60 words) and the other half to another StdSAE subject (60 words). This arrangement meant to counter any learning effects which might occur when listening to a fairly lengthy sample of speech from one individual. At the end of the first 60 word presentation, the first StdSAE subject was asked to leave the room and the second StdSAE subject was presented with the remaining half of the word list. Thus each StdSAE subject listened to 120 items spoken by two different BSAE readers, and each BSAE reader read a complete word list to two different StdSAE listeners.

Instructions to listeners

Each StdSAE subject was advised that s/he would be taking the role of 'writer' in the experimental situation, while the BSAE subject would be the reader. It was explained that the BSAE subject would be reading a list of common English words and that s/he needed to listen carefully and write down the words on the blank answer sheets provided. Subjects were advised that many words would be repeated throughout the list. They were requested to guess a word if they were uncertain of what to write.

Instructions to readers

Each BSAE subject was presented with a list of randomly selected stimuli. The speaker was requested to read each word only once, and to leave an adequate pause following presentation of an item which would allow the listener time to write down what was heard. It was assumed that the BSAE reader carried out a grapheme-phoneme conversion which reflected the nature of his/her phonological system which might reveal some inadequacies due to linguistic interference. The listener wrote down what s/he heard, based on his/her own phoneme-grapheme conversion. This reflected the speaker's inadequacies as well as any perceptual inadequacies of the listener. Presuming that the listener performed the conversion in his/her own first language, the

latter factors should have been minimal while former factors should have been clearly reflected.

Analysis of the written data of StdSAE subjects to determine patterns of success and failure

The answer sheets of StdSAE subjects were compared to the master lists which had been read by BSAE subjects. Each written 'answer' word was marked as either correct when it matched the item which the BSAE speaker had read, or it was marked incorrect when it differed. Spelling was not considered important, provided the written word shared pronunciation with the target. The resulting percentages were interpreted as an overall measure of success that was achieved in the experimental task.

Each incorrect word was examined to determine where the difficulty seemed to have occurred. In some cases incorrect vowel perception resulted in inaccurate answers (e.g. 'bed' for 'bird'), in other cases incorrect consonant perception (e.g. 'bet' for 'bed') and in other cases combinations of both vowel and consonant errors (e.g. 'sit' for 'seed') were the cause of "wrong answers." Errors were analysed into vowel and diphthong errors, and consonant errors and expressed as a percentage of the total vowels and consonants in the list to determine if any broad trends in errors could be evidenced.

Clinical analyses by Stoel-Gammon and Herrington (1990), and Pollock and Keiser (1990) of vowel errors in children were used as a basis for the analysis. The error analysis of consonants relied on phonological process analysis (Ingram, 1981; Grunwell, 1982) and in addition, Stoel-Gammon and Herrington's (1990) vowel analysis framework was adapted for use in the analysis of consonants, where it was used to summarise relevant information derived from the distinctive features and phonological process analyses.

Information in the individual subject profiles was then analysed to determine trends which recurred from subject to subject. Information from individual subject profiles was extracted and incorporated into tables that indicated the percentage of correct usage for each individual phoneme across subjects, as well as the phonemes more consistently in error. Error matrices for vowels and consonants were examined together with a summary of the findings of the error analysis.

RESULTS & DISCUSSION

ANALYSIS OF STDSAE SUBJECTS' RESPONSES TO DETERMINE PATTERNS OF SUCCESS AND FAILURE

Percentage of words correct

The overall percentage of words correctly perceived by listeners was calculated for each BSAE reader. The results are presented in Table 2. Percentages ranged from 46.6% to 81.6%. The average percentage of correct words for each BSAE subject fell between 55% and 71%. Overall it can be seen that the subjects communicated approximately two thirds of their message accurately to their listeners.

Percentage of phonemes correct

The overall percentages of vowels/diphthongs and consonants correctly perceived are presented in Table 3.

Consonant scores were consistently higher than those of the vowels and diphthongs. Subject's consonants were always correctly perceived at least more than 86% of the time. Only two subjects (S4 and S10) had their vowels and diphthongs accurately perceived more than 80% of the time. The majority of subjects' (7/10) vowels and diphthongs were accurately perceived 70 to 79% of the time. One subject (S2) had a score that fell marginally below this range (68%).

Detailed analysis of the trends at segmental level

Vowels and diphthongs

The pooled data for all subjects, summarised in the confusion matrix (Table 4), underline the trends in substitution errors. Only incorrect productions are included.

The category 'other' contained sounds that were omitted from subjects' responses. Scores of less than 75% were regarded as phoneme errors (36). Using this categorisation, it was found that all subjects had 5 or more vowels in error, and seven subjects had 7 vowels or more in error.

A comparison of subjects' error profiles reveals that the vowels most consistently in error were /i:/ and /ɜ:/ (incorrect for all subjects); /æ/ (incorrect for 9/10 subjects) and /e/, /ɑ:/, /o:/ and /eə/ (incorrect for 6 or more subjects). The vowels and diphthongs perceived correctly most often were /eɪ/, /ə/, /o:/, /ʊ/, /aɪ/, /aɪ/, /aʊ/, /oɪ/ and /ɪə/.

Consonants

Consonantal errors were relatively few and seem to play a lesser role in miscommunication than the vowels.

TABLE 2. Overall percentage of words correctly perceived.

| Subject | Listener 1 % Correct Words | Listener 2 % Correct Words | Average % Correct Words |
|---------|-------------------------------|-------------------------------|----------------------------|
| S1 | 58.3 | 76.6 | 67.5 |
| S2 | 71.6 | 48.3 | 60 |
| S3 | 68.3 | 73.3 | 71 |
| S4 | 58.3 | 81.6 | 70 |
| S5 | 63.3 | 76.6 | 70 |
| S6 | 53.3 | 56.6 | 55 |
| S7 | 58.3 | 73.3 | 66 |
| S8 | 63.3 | 46.6 | 55 |
| S9 | 71.6 | 51.6 | 61.5 |
| S10 | 63.3 | 68.3 | 66 |
| Mean | 62.96 | 65.28 | 64.2 |

TABLE 3. Percentages of individual phonemes correctly perceived.

| Subject | % Consonants Correct | % Vowels / diphthongs Correct |
|---------|----------------------|-------------------------------|
| S1 | 92.1 | 75.4 |
| S2 | 88.1 | 68.5 |
| S3 | 97.4 | 79.6 |
| S4 | 95.5 | 81.7 |
| S5 | 94.3 | 74.4 |
| S6 | 86.3 | 77.2 |
| S7 | 90.0 | 78.4 |
| S8 | 92.0 | 72.0 |
| S9 | 90.5 | 70.4 |
| S10 | 87.2 | 82.4 |
| Mean | 91.3 | 76.0 |

Difficulties noted in this section typically occurred in only a few instances or for only one subject. The pooled data for all subjects underline the trends in substitution errors, and these are summarised in the confusion matrix in Table 5.

Using 75% as a cut off point for consonants considered in error, it was found that one subject had 5 consonants in error (S6); two subjects had 3 consonants in error (S2, S10); three subjects had 2 consonants in error (S1, S7 and S9); three subjects had only one consonant in error (S4, S5 and S8); one subject (S3) had no consonants in error. The consonants most frequently in error were /j/ and /ɹ/ (incorrect for 6 subjects); /ð/ (incorrect for 3 subjects) and /k/ (incorrect for 2 subjects).

Phonological Process Analysis

Phonological processes identified by Ingram (1981) and Grunwell (1982) were used as a basis for this analysis. McReynolds and Elbert (1981) suggest that in order for a process to be regarded as part of an individual's phonological system, quantitative criteria need to be met. These authors suggested that there should be evidence of a process operating for at least 20% of the instances where it could operate. In this study, none of the subjects met this criterion in terms of consonants -and this is not surprising when

examining the high percentage scores achieved.

Despite the lack of quantitative evidence, certain qualitative trends are evident in the results. Six of the subjects showed evidence of word final de-voicing and five subjects showed evidence of word final voicing, making these the most commonly used processes. The error matrix in Table 5 shows the confusion between voiced and voiceless pairs such as /t/ and /d/; /k/ and /g/ and to a lesser extent /s/ and /z/. The phonological process analysis is useful in that it indicates the word position where the confusion consistently occurred. Three of the subjects used both the word final de-voicing and voicing prominently (S1, S2, S8). Subjects 4 and 9 used the voicing process prominently as opposed to S6, S7 and S10 who used the de-voicing process consistently. S3 and S5 used neither of these processes.

De-voicing of final consonants is a process that can be accounted for in terms of Nguni phonotactics. BSAE subjects applied the constraints of Nguni syllable structure to the English words and this placed consonants in word final position under pressure for de-voicing or, in some cases, complete deletion. English words may have an open or closed syllable structure, and words may end with voiced or voiceless consonants. These differences between BSAE speakers' L1 and L2 could have resulted in the potential for confusion. In this study, word final de-voicing was one

Table 4. Confusion matrix for vowel substitution errors

| | | PERCEIVED AS | | | | | | | | | | | | | | | | | | | | | |
|--------|----|--------------|----|----|----|----|----|---|---|----|----|----|----|---|---|----|----|----|----|----|----|-------|--|
| | | i: | ɪ | e | eɪ | æ | ʌ | ə | ɒ | ɑ: | ɜ: | o: | ou | ʊ | ʊ | aɪ | aʊ | ɔɪ | ɪə | eə | ʊə | other | |
| TARGET | i: | | 68 | 2 | 1 | | | | | | | 2 | | | | | | | | | | | |
| | ɪ | 1 | | 1 | | 1 | | | | | | | | | | | | | | | | | |
| | e | | | | 7 | 14 | | | | | 11 | 2 | 2 | 2 | | | | | | | 1 | 1 | |
| | eɪ | 2 | | | | | | | | | | | | | 3 | | | | | | | | |
| | æ | | 17 | 19 | 2 | | 1 | | | | | | | | | | | | | | | | |
| | ʌ | | | 1 | | 5 | | | 4 | 16 | | | | | | | | | | | | | |
| | ə | | | | | | | | | | | | | | | | | | | | | | |
| | ɒ | | | | | | | | | | | 2 | 3 | | | | | | | | | | |
| | ɑ: | | | | | 4 | 14 | | 5 | | 2 | | | | | | | | | | | | |
| | ɜ: | | 3 | 21 | 5 | 21 | 3 | | 1 | | | 6 | | | | 1 | | | 5 | 1 | | | |
| | o: | | | | | | | | 8 | | | | 6 | 1 | | | | | | | | | |
| | ou | | | | | | | | | | | | | 1 | 8 | | 1 | | | | | | |
| | ʊ | | | | | | | | | | | | | | | 1 | | | | | | | |
| | ʊ | | | | | | | | | | | | 2 | | | | | | | | | | |
| | aɪ | | | | | | | | | | | | | | | | | | | | | | |
| | aʊ | | | | | | 1 | | | | | | | | | | | | | | | | |
| | ɔɪ | | | | | | | | | | | | | 1 | | | | | | | | | |
| ɪə | | | | | | | | | | | | | | | | | | | | | 1 | | |
| eə | | | | 1 | 1 | | | | | | 2 | | | | | 1 | | | 1 | | | | |
| ʊə | | | | | | | | | | | | 1 | 2 | | | | | | | | | | |

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of the most prominent sources of listener confusion. Together with word final voicing which also occurred, it seems to reflect a general confusion regarding the perception of final consonants. Final consonant deletion was used prominently by three subjects (S3, S7 and S9).

EVALUATION

Findings of the present study suggest that the main difficulties which BSAE speakers experience when communicating a list of words to StdSAE speakers, are related to the vowel characteristics of words.

Under-differentiation is likely to account for the problems experienced as Xhosa speakers attempt to map the more complex and more numerous StdSAE vowels onto their L1's 5 vowel system. Results of this study have suggested that the following vowel and diphthong perception errors, and to a lesser extent consonant perception errors, lead to miscommunication. They are thus classed as Level 1 or functional level difficulties because they have the capacity to affect meaning.

Level 1: Functional 'Errors' of BSAE Speech

/i:->/I/, and to a lesser extent /I/->/i/. The inability of BSAE speakers to assign length to long vowels has been consistently noted from the earliest research by Lanham in the 1960s to more recent research in the present decade. The phonemes /i:/ and /I/ seem to provide the clearest example of this characteristic.

/o:->/o/. This is another example of the confusion that arises due to lack of length distinction. It has also been consistently noted throughout BSAE research.

/æ, ɜ:, eI/->/e/. As early as 1967, Lanham suggested that the StdSAE vowels /e, æ, ɜ:/ are merged to /e/. Later researchers such as Khumalo (1984), and Gough (1996) found similar patterns of under-differentiation, and again these were found in the present study. Lanham and Traill (1965) suggested that many of the StdSAE diphthongs are realised by BSAE speakers as monophthongs, as for /eI/->/e/. This characteristic has been found by later researchers (e.g. Gough, 1996) as well as in the present study.

/æ/->/e, I/. The present study revealed the front vowel /æ/

Table 5. Confusion matrix for consonant substitution errors.

| | | PERCEIVED AS | | | | | | | | | | | | | | | | | | | | | | | |
|--------|----------------|--------------|---|---|---|---|---|---|---|----|----|---|----|---|---|---|----------------|----------------|---|---|---|---|---|---|-------|
| | | p | b | m | w | f | v | θ | ð | t | d | s | z | n | l | f | t ₃ | d ₃ | j | r | k | g | ŋ | h | other |
| TARGET | p | | 1 | | | | | 2 | | | | | | | | | | | | | 2 | | | | |
| | b | | | | | | | | | 1 | | | | | | | | | | | | | | 6 | 2 |
| | m | | | | | | | | | | | | | | 1 | | | | | | | | | | 2 |
| | w | | | | | | | | | | | | | | | | | | | | | | | | |
| | f | 1 | 2 | | | | | | | 1 | | | | | | | | | | | | | | | |
| | v | | | | 1 | | | | | 1 | | | | | | | | | | | | | | | 1 |
| | θ | | | | | 1 | | | | 2 | | | | | | | | | | | | | | | |
| | ð | | | | | | | | | | 3 | | | | | | | | | | | | | | 1 |
| | t | | | | | | | 2 | | | 17 | | | | | | | | | | | | | | 1 |
| | d | | | | | | | | | 31 | | | | | | | | | | | | | | | |
| | s | | | | | | | | | | | | 11 | | | | | | | | | | | | |
| | z | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| | n | | | 9 | | | | | | | | | | | 4 | | | | | | | | | | 9 |
| | l | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| | f | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 |
| | t ₃ | | | | | | | | | | | | | 3 | | | | | | | | | | | |
| | d ₃ | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | |
| | j | | | | | | | | | | | | | | | | | | | | | | | 8 | 1 |
| | r | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 |
| | k | | | | | | | | | | | | | | | | | | | | | | 8 | 0 | 1 |
| g | | | | | | | | | | | | | | | | | | | | | 1 | | | | 2 |
| ŋ | | | | | | | | | | | | | 5 | | | | 1 | | | | | | | 1 | |
| h | | | | | | | | | | | | | | | | | | | | | | | | 1 | |

as a source of great confusion for listeners to BSAE speech. /æ/ is frequently perceived as /e/ (as noted above). Other authors (e.g. Bailey, in Wade (1996)) have suggested that /æ/ is variably produced as /e/ or /ɛ/. In the present study it was found that the front vowels /e/ and /ɛ/ were most frequently perceived for /æ/.

/ɜ:/->/æ, e/. Previous research has suggested that /ɜ:/->/e/. In the present study it was found that /ɜ:/ is variably perceived as /æ/ and /e/.

/ʌ/ -> /a/; /ɑ:/ -> /ʌ/. Previous findings (e.g. Bowles, 1994 and Bailey in Wade, 1996) have agreed that /a/ and /ʌ/ are typically both realised as /ʌ/ in BSAE speech. In the present study a general confusion in the perception of the two sounds was noted.

/eʊ/-> /v, o:/. Lanham and Traill (1965) suggested that many of the StdSAE diphthongs are realised by BSAE speakers as monophthongs, and suggested /eʊ/->/o:/ as an example of such a process. Khumalo (1984), Gough (1996)

TABLE 6. Functional Classification of BSAE features.

Level 1 – Functional Level Difficulties. These features of BSAE are thought to have the potential to alter the meaning of single words in StdSAE.

1. Inability to assign length feature to long vowels so that /i:/ and /ɪ/ -> /ɪ/, and to a lesser extent /i/->/ɪ/.
2. Inability to assign length feature to long vowels so that /ɜ:/ and /o:/ -> /o/ OR /o/->/o:/.
3. Absence of mid and high central vowel /ɜ:/.
4. /æ/, /e/ and /ɜ:/ ->/e/. /æ/ also to /ɪ/. /ɜ:/ also to /æ/.
5. /ʌ/ and /ɑ:/ -> /ɑ/. Also /ʌ/ and /ɑ:/ -> /ʌ/.
6. /eə/ -> /e/ or /ɜ/.
7. /ʊə/->/eʊ/.
8. Some diphthongs tend toward monophthongs e.g. /eʊ/ -> /o/ or /ʊ/ (or /o:/) ; /eɪ/ -> /e/.
9. Interdental /θ/ and /ð/ are replaced by alveolar /t/ and /d/.
10. Devoicing of /d/ and /g/ in word final position.
11. Voicing of /t/ and /k/ in word final position.
12. Voicing of /s/ to /z/ in both word final and initial positions.
13. /j/->/h/.
14. /tʃ/->/tʃ/.
15. /ð/->/d/.

Level 2 – Aesthetic Level Difficulties. These features of BSAE may characterise the distinct dialect and distinguish it from StdSAE at an aesthetic level. However, they seem to have a lesser effect on intelligibility than the features listed above.

1. Inability to assign length feature to long vowels so that /ɑ:/ and /ʊ/ -> /u/.
2. Absence of /ɪ/ and schwa.
3. Inability to maintain stress contrasts.
 - a) Unstressed schwa is realised as /ɑ/, or
 - b) schwa -> /ɑ/, /i/, /e/ or /u/.
4. Confusion between /ɑ/ and /e/.
5. /ʌ/ and schwa -> /ɑ/.
6. /o:/ and /ɔ/ -> /o/.
7. An overly tense basis of articulation.
8. /æ/, /ɑ/ and /ʊ/ -> /ɑ/.
9. The broader diphthongs are realised as sequences of simple vowels
 - a) /aɪ/ -> /ai/
 - b) /aʊ/ -> /au/
 - c) /ɔɪ/ -> /ɔi/
 - d) /ɪə/ -> /iɛ/ [ie ~ ia]
 - e) /ʊə/ -> /ua/.
10. Others (the narrow ones) are extended over two syllables and separated by glides
 - a) /aɪ/ -> /aɪj/
 - b) /aʊ/ -> /awa/
 - c) /ʊə/ -> /uwa/
 - d) /eʊə/ -> /owa/
 - e) /ɪə/ -> /ija/.
11. Devoicing of obstruents /b/, /dʒ/ and /z/ in word final position.
12. Confusion between approximants /r/ and /l/.
13. /tʃ/ -> /tʃ/.
14. Generally trilled /r/.
15. Stops have later voice onset time.
16. /ʒ/ -> /dʒ/.
17. Simplification of consonant clusters by insertion of epenthetic vowel e.g. /stri:p/->/sterɪp/.
18. Epenthetic vowel inserted in place of syllabic consonants /n, m, l/ e.g. /botl/->/botel/.

and Bailey (in Wade, 1996) all found evidence of such simplification in their studies. In the present study it was found that /eʊ/->/ʊ,o/. In terms of the /ʊ/, this follows the principles suggested by authors such as Lanham and Traill (1965) and Wade (1996) where the diphthong is reduced to a single vowel. The /o:/ may have been produced by the BSAE subjects in an attempt to produce a more lengthy vowel. This study was concerned primarily with perception, as opposed to production, and StdSAE listeners may have expected a longer phoneme and hence perceived the /o:/ phoneme, in the place of the diphthong.

/eə/->/ɜ/. Authors such as Khumalo (1984) and Wade (1996) have suggested that /eə/->/e/. In the present study it was found that /eə/ is most frequently perceived as /ɜ/.

/ʊə/->/eʊ/. Previous studies have not mentioned this diphthong substitution, which may be a new contribution to research on features of BSAE, or it may be idiosyncratic to the small numbers of subjects in the study. Further research is required to determine the status of this phoneme in BSAE.

/j/->/h/ (*glottal substitution*). Previous research has not made mention of difficulties in the production of /j/ by BSAE speakers. South African English speakers with Afrikaans as their L1 may produce these phonemes as allophones, and exposure to this may have influenced both the production and perception of the sounds by the subjects in the study.

/ŋ/->/n/. To the authors' knowledge, no previous studies have indicated difficulties with the phoneme /ŋ/. In the present study it proved to be one of the most problematic phonemes and was most frequently realised as /n/. As previously acknowledged, there were limited opportunities for subjects to use the sound and further research will be required to determine its status in BSAE more accurately.

/ð/->/d/. Previous studies (e.g. Khumalo, 1984; Jacobs, 1984; Gough, 1996) have suggested that /t/ and /d/ might be used to replace their inter-dental counterparts in BSAE. In this study, /ð/->/d/ only was found to be problematic. Some authors (e.g. Gough, 1996) have suggested that the feature is a basilectal one. Further research will be required to determine the pervasiveness of this feature throughout all varieties of BSAE.

/d/->/t/ (*word finally*); /t/->/d/ (*word finally*); /k/->/g/ (*word finally*); /s/->/z/ (*word finally, word initially*). Many researchers (e.g. Khumalo, 1984; Gough, 1996) have suggested that word final de-voicing is characteristic of BSAE speech, and of L2s more generally (Van Rooy, 1995). In the present study, this was to some extent, confirmed. /d/ was de-voiced to /t/ word finally, and on many occasions the reverse occurred so that the voiceless final sound was perceived as voiced. This may reflect the BSAE speakers attempts to compensate for what they realise is an area of difficulty, or it may reflect the listeners' taking these factors into account when hearing the BSAE speech. In any event, the result is confusion and miscommunication of the single words. For the phonemes /k/ and /g/, word final voicing proved most problematic as /k/->/g/ most often. /s/ was frequently perceived as its voiced counterpart /z/, both word finally and word initially. Jacobs (1984) had noted that /z/ >/s/ more frequently in her study.

A re-examination of previous studies summarised in Table 1 suggests that:

- (a) the findings of the present study are not entirely new.
For the most part they confirm previous findings on

features of BSAE phonology. Some new features were noted, and these will require further investigation with a larger number of subjects to determine their true status in BSAE.

- (b) the features of BSAE speech highlighted in this study are all Level 1 features. Thus the remaining features of BSAE most likely represent Level 2 (aesthetic or non-meaning related) features.

A re-classification of BSAE features presented initially in Table I is presented in Table 6. Results of this preliminary study suggest that features of BSAE can be divided into two distinct categories, and that this will be a useful way for speech and language therapists to conceptualise their involvement in the area.

Hypotheses made regarding BSAE features and Flege's Speech Learning Model (1995) were partially proved. StdSAE phonemes which are similar to those of Xhosa were expected to be maximally problematic in the study. While this was the case with /i:/, /o:/ and /a:/, other vowels in this category did not pose particular difficulties. Novel sounds were not expected to be problematic for BSAE speakers. However, in the present study, all novel sounds with the exception of unstressed /ə/ and /l/, proved problematic and resulted in miscommunication.

Successful communication depends on both speaker and listener. This study aimed to focus on BSAE speakers' pronunciations through examination of the reported outcome by listeners. However, intra-judge reliability is relatively inconsistent and difficulties may have resulted because of the listeners' perception. This is a shortcoming of the present study and an aspect that needs to be investigated further.

IMPLICATIONS

Towards principled decision making: phonology therapy with non-standard dialect clients

The classification of non-standard dialect features into two distinct levels provides the speech and language therapist with a framework for involvement with these clients. Firstly, s/he must evaluate the needs of the client and determine at which level/levels the focus of therapy will be. Both therapist and client need to have a clear understanding of the intended outcome of therapy. Results of the present study, as summarised in Table 6, provide the therapist working with BSAE-speaking clients with normative data regarding the *types of features* that might be addressed at each level. This type of information could be gathered and organized in a similar way for other non-standard dialects. Grunwell (1992) notes that in seeking to establish principles of decision making in clinical practice, one attempts to delineate a set of guidelines whereby the clinician can identify explicitly, justifiably and confidently treatment goals and priorities. This section is based closely on Grunwell's (1992) chapter entitled "Principled decision making in the remediation of children with phonological disorders." Grunwell's (1992) chapter follows the framework below:

- Clinical characteristics of client group
- Basis for decision making
- Remediation
- Decision-making principles for treatment planning.

Clinical characteristics of client group

The client group under discussion is characterised by client dissatisfaction with dialectal speech that differs from the relevant standard variety at either, or both, the functional level and the aesthetic level. This client group has normal hearing, a lack of speech and language pathology and normal intellectual, anatomical and neurological development.

Basis for decision making

The basis upon which decisions in treatment planning are made is a phonological assessment and it is essential that the evaluation reveal the accent characteristics and / or intelligibility difficulties. Case history interview should aim to determine the type of level(s) that assessment and remediation should target. The assessment framework should be relatable to a treatment framework. At the functional level, assessment might utilise a similar task to the one in this study. Tape-recording of the single word reading task would be useful for the clinician to detect aesthetic differences which are present but do not affect meaning.

The phonological evaluation of this assessment poses the following questions:

- are the speaker's pronunciation patterns as would be expected, or not? (based on, for example, Table 6).
- If some patterns are idiosyncratic, specify these and determine any possible causes and consistency of use.
- Where there are differences, what are the implications for the individual's ability to signal meaning differences? (adapted from Grunwell, 1992).

The results presented in Table 6 are meant to provide guidelines for therapy with BSAE-speaking clients. Clearly not all features would be evident in the speech of each BSAE client, and the therapist would need to select carefully the applicable ones to be addressed.

Remediation

The purpose of speech therapy intervention is to bring about change in pronunciation patterns. It is suggested that the creation of phonological knowledge for the L2 speaker is affected by restricted perceptual encoding potential which may lead to a failure to store adequately less familiar phonetic elements (Grunwell, 1992). Therapy would thus focus on exposing the L2 speaker to these elements and making them explicitly aware of the phonological and articulatory features which characterise them in an L1. Accurate perception of L2 sounds is a basic tenet of Flege's Speech Learning Model which aims to account for age-related limits on the ability to produce L2 vowels and consonants in a native-like fashion (Flege, 1995). The model claims that without accurate targets to guide the sensori-motor learning of L2 sounds, production of L2 sounds will be inaccurate. It may be beneficial to train speakers first to perceive sounds accurately in L1.

Approaches should therefore be individualised with strategies specifically designed to assist the individual to overcome or compensate for particular constraints.

Decision Making Principles for Treatment Planning

- Variability should be targeted in order to establish stable and accurate realisations.

- The system of contrasts should be expanded to increase communicative adequacy.
- New contrasts should be introduced first in well-established structures.
- The phonotactic potential should be extended to increase communicative adequacy.
- New structures should be introduced using better established phonemes.
- The patterns that should be targeted first are those that are most destructive of communicative adequacy in regard to the speaker's linguistic abilities.

CONCLUSIONS

There is a need for speech and language therapists throughout the world to make their services useful and relevant to a vast multilingual population. This awareness is important in determining where difficulties experienced by such speakers are pathological or due to linguistic or cultural differences. Making such a distinction is vitally important. However, this project developed from an interest in addressing the more specific needs of bilingual speakers who form part of a large, emerging middle class in a developing country.

Many speech and language therapists may hesitate to become involved in an area which has traditionally been the domain of corporate communication trainers or "TESOL" teachers. This paper suggests a broad clinical-type framework for therapists to use in this area, and shows that phonological concepts can readily be applied to this client group. The methodology used in the present study, and the category guidelines presented in Table 6, are all readily applicable to daily clinical work.

The categorisation of BSAE phonological features at a segmental level, into functional and aesthetic levels, is the major contribution of the study. Further research will be required to determine the accuracy and appropriacy of the categorisation. It is hoped that this study will stimulate and encourage the involvement of more speech and language therapists in meeting the needs of non-standard dialect speaking individuals.

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